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AUTHOR Figueiredo, Nice
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ABSTRACT

This paper considers the application of computers and microcomputers for library automation in Brazil, and the relationship of this application to that country's national policy on informatics. The discussion begins by comparing applications of computers in library automation in developed and developing countries, and several barriers to library automation in developing nations are noted, e.g., the lack of sophistication of users, the lack of specialized human resources and equipment, the high cost of developing computer systems, and lack of agreement on common bibliographic format. Still, it is observed that library automation has been proceeding in Brazil since the 1960s, and encouraging signs are noted, including the implementation of guidelines developed by the Brazilian Institute for Information in Science and Technology (IBICT). It is suggested that, although IBICT has recently undergone internal restructuring, the most difficult initial steps in library automation have already been completed in Brazil, and it remains to be seen whether "political fluctuations" so common to developing nations will interrupt the planned steps for library automation in that country. (26 references in English and Portuguese) (EW)

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THE APPLICATION OF MICRO-COMPUTERS IN LIBRARIES: A CASE STUDY ON BRAZIL

Nice FIGUEIREDO

Brazilian Institute for Information in Science and Technology/School of Communication-Federal University of Rio de Janeiro
Rio de Janeiro, Brazil

It is discussed the application of computers and micro-computers for library automation in Brazil. Greatly influencing this application is the development of a national policy on informatics, since the early seventies, which regulates the use of electronic data processing equipments in the country. A summary of the discussions held in the country and the controversy surrounding this national policy is also provided. For describing the application of micro-computers in libraries, a comparative study is made on the application of micro-computers for library automation, between Brazil and developed countries. In this study, and through a review of the literature, it is shown the numerous problems and barriers - as appointed by several international authors - which hinders the application of computers in libraries, in the developing countries. Besides the technical and economic barriers, socio-political problems are emphasized. Concluding the study it is given a picture of the situation in Brazil, where the Brazilian Institute for Information in Science and Technology (IBICT) has taken the role of coordinator of the national efforts for action in the area of scientific and technological information.

1. INTRODUCTION

This paper deals with the development of the application of computers for library automation in Brazil, comparatively with the evolution occurred in the developed countries, through a review of the literature. The idea for presenting this paper came from one of Saracevic's articles when he discusses that "a number of LDCs are reordering national priorities in industrialization along the lines of appropriate technology... to reduce the dependency on developed countries, and to provide a framework for new economic order..." (1). The case study presented on Brazil efforts in the area of informatics has the objective of illustrating this statement.

In his article, Saracevic also questioned the lack of awareness of the information personnel about the problems faced by the LDCs for implement these efforts. The second part of this paper has as objective to contribute to a better understanding of these problems.

First of all, it must be explained that it is necessary a knowledge of the legislation in this area in order to grasp the development of the application of informatics for library automation in Brazil.

According to this legislation, the coordination of research, development and productivity of electronic components are under Government control and regulation, which established a market reservation for the production of micro-computers in the country (2). Rosenberg, in an article for JASIS, in 1982, expressed clearly his favorable position about this policy (3). On the other hand, the Brazilian newspapers on that period commented that "to the national

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industries, which benefitted with the market reservation imposed by this policy, the credit for the Brazilian action was positive" (4). The debate of this policy in the Senate Commission on Economy was full of controversy. Discordant points of view were expressed, some defending the policy, others severely attacking it. The great debate, however, about the policy of informatics adopted by the country, was essentially the result of divergent positions regarding the model for economic development: with or without foreign capital (5).

Considerations about these positions were such as: "Technology divides the world in countries that create and countries that use technology; one cannot build a nation eminently user of technology. Today, the power of a nation comes more from the technical competency of their people than of their natural resources. The market reservation represents a possibility for the Brazilian engineering to participate in the productive process". Or this other opinion against the market reservation: "A fallacy is that with market reservation there would be a tremendous surge of technological activity in the country. This is not true. Technology depends on the dimension of the market, on the stock of trained brains and on the level of freedom and competitiveness - indispensable conditions for creativity. We lack all of these" (6).

The Brazilian law on informatics, as sanctioned by Congress is considered a rigorous code for the control of the world of computer hardware. It consecrates the market reservation for manufacturers with totally national capital forbidding foreign industries to associate with national companies. This restriction, which according to the law, will last for eight years, concerns only the production of mini-micro computers, the multinational companies still holding half part of the Brazilian market of informatics.

For the information personnel of the developed countries to become aware of the problems faced by the LDCs in the application of technology for information activities, it is necessary for them to understand first that this matter is discussed under the concept of establishing a model for development, and with the rationale that informatics serves for development or domination. It is believed that the technological domination of the modern times, through the use of technology or informatics is the more effective and permanent domination that can be achieved by the rich nations on the small, poor LDCs.

2. COMPARATIVE STUDY OF THE DEVELOPMENT OF THE APPLICATION OF COMPUTERS IN LIBRARY AUTOMATION IN DEVELOPED COUNTRIES AND IN BRAZIL

A Brazilian author, maybe echoing nationalistic voices, stated in 1977 that the suggestion of the developed countries for the LDCs to adopt intermediate technology could be a good advice or was it a trap to create new dependence and delay development? Some barriers were listed by this author for the application of computers in Brazilian libraries: 1. Cultural, that is, the tradition of a non-technological society; 2. Lack of national technology, characteristic inherent to LDCs; 3. The mystic about computers, or the tradition that computing personnel/services are expensive and so on (7).

The first barrier was well explained by Menou (8) and Eres (9) when they traced the lack of parallel between developed countries and LDCs on this respect. Molino & Guadarrama declared that in the LDCs the user community are not usually prepared to use or do not require sophisticated services (10).

The third barrier, on the other hand, presents a resemblance with the developed countries where, according to Eyre, the same problem existed between librarians and computer people (11). But in Brazil, the problem was exacerbated because the meeting of the librarian and the system analyst is not a meeting between equals: it is a meeting between a relatively low status librarian and a relatively high status system analyst (12). The relationship between librarians and

system personnel, as complained by a Brazilian librarian, "is from the beginning slow and painful for both parts" (13).

McCarthy, an English librarian who lives in Brazil and has a Ph.D. in the USA, presented in his dissertation about library automation in Brazil, a listing of 19 problems for hampering this activity (14). His listing was very similar to that of Saracevic's article, and aside from the general and structural problems he identified for his dissertation, surveying professionals involved in the task of library automation in Brazil, in 1980, other types of problems were raised in the literature. Eres pointed to social/political/economic barriers, as also did Munn (15) and Molino and Guadarrama detailed them; but all seem to agree with McCarthy when he says: "We must remember that automated library and information system are not only products of industrialized societies, they are also tools which in themselves promote industrialization. A fully industrialized society cannot exist without an informed population and an efficient information system" (16).

Other difficulties for library automation in Brazil were pointed out by Aguiar, such as: lacking of specialized human resources, incompatibility between the software and the data processing equipment; higher cost for developing and implementing those systems, the limited time allowed for librarians to use the equipment, the indefinition on the format for bibliographic description (17).

Nowithstanding all these barriers, problems, dilemmas, political-social-economic situation and so on, library automation has been evolving in Brazil since the last part of the sixties; it started out of enthusiasm and possibility of making use of a computer, without second thoughts about its benefits, costs or difficulties (18). The same thing seems to have happened in the developed countries for, according to Eyre, "library automation started out of prestige, technical curiosity and offers of free computing facilities".

The range of application of the computer for library automation in Brazil presents similiarity with the beginning of the application in developed countries, as according to Saracevic, the application in the LDCs were from the production of simple indexes and union lists, to putting bibliographies and catalogues, to information retrieval applications, and in most instances they were copies of what was done in the developed countries.

It is to be noted that the equipment in use at that time of those first projects in Brazil were the medium and large size computers, and the systems were operated through batch modes, while at the same time, late sixties and early seventies, the developed countries were regularly using on-line systems and the application of mini and micro-computers had already started.

These initial systems in Brazil were isolated, with few possibilities for continuity and were implemented to satisfy local needs only, with restricted performance; the software had to be developed in the own institutions, causing the proliferation of different methods and multiplication of formats. This created an obstacle to the integration of information (19). McCarthy remarked in his study that "something similar appears to have happened in the U.S. were OCLC produced catalogue cards in a great variety of styles". Such failure to standardize led to difficulties in cooperation, which is one of the reasons for library automation after all. In Brazil's case, there was almost no cooperation, both on the official and the personal level, networking has never been popular and librarians do not meet frequently. Therefore, McCarthy concludes, the appearance of the computer could not be expected to bring about an immediate alteration to this situation. The main obstacle to cooperation, being lack of desire, rather than lack of technical means.

The lack of experienced personnel was one of the major problem for the implementation of library automation in Brazil, a problem that developed countries

avoided through the hiring of personnel who had already worked on a system similar to that hoped to be implanted. In Brazil, this option was greatly reduced because staff mobility is low for a variety of reasons, both practical and social, specially in librarianship.

Financing was always a problem for library automation in Brazil, therefore,only the cheapest solutions were adopted, being not common the use of a terminal, printouts being the most frequent form of outputs.

Lack of government policy and adequate in-house planning were ranked high in McCarthy'survey of problems hampering library automation in Brazil. The reason being that there is no effective national planning for library and information work, creating a most glaring disparity with duplication of information systems for the same areas, while other fields are without information. Lack of in-house planning, therefore, being a natural corollary to the lack of national planning.

Some advantages are pointed out by some authors in these incipient infrastructures as: "there are less restrictions on the design of information systems than those found in more advanced countries, including solutions that would not be feasible in industrialized nations. The LDCs then are allowed to leap over some of the development stages that other countries had to go through (20).

Saracevic was also able to see an advantage in this aspect, when he said that "there were many mistakes commited in the application of information technology in the LDCs, the same ones in the U.S. But since the professionals in LDCs have pretty much left this work to themselves with relatively little assistance, these efforts were powerful learning experiences. They may have been less sucessful operationally but were certainly sucessful in terms of education and experience" (21).

3. CONCLUSIONS

McCarthy identified an encouraging sign emerging in Brazil in 1980: the 3rd Basic Plan for Science and Technology Development which devoted a lenghty section to Science and Technology Information attributing to IBICT the implementation of the guidelines for this sector.

One of the areas emphasized in these guidelines was library automation and, therefore, one of IBICT's first steps was regarding the format, establishing a Brazilian format based on Mark II and fomenting it for the register of bibliographic data throughout the country. It was also proposed a cooperative scheme, similar to OCLC, making available by online terminals the bibliographic registers of seven libraries in the Federal District of Brasilia.

IBICT main activities in the area of automation these few last years (after McCarthy'survey) have been devoted to:

1. Planning and promotion of library automation and information systems in the country;
2. Incentivate the standardization, at national level, of the equipment and software applied in the automation of technical and administrative procedures of libraries and information centers;
3. Strengthening the infrastructures of equipment and software and services necessary to the automation of libraries and information centers (22).

IBICT's program as a coordinator of the actions in the area of information seem exactly what Molino and Guadarrama proposed when stating that "a coordination effort is essential for this type of activity, and it should contemplate norm-

alization, training, support and overall planning" (23).

Regarding education for library automation, it must be said that it has had great improvements these last few years since McCarthy'survey; with the implementation of a new minimum curriculum for library and information sciences courses, library automation is now one topic of the required discipline of Library Management. A governmental program is promoting the development of human resources with the creation of a course on Automation of Information, as well as supporting existing efforts in the country with provision of infrastructures and interchange of instructors.

This idea of automation projects for spreading experience around the country was suggested by McCarthy and also by Griffiths, when he asserted that: "It is necessary to create a program to educate and inform information professionals about current developments and future potencials of the technology" (24).

Many changes have occurred therefore in this area in Brazil, since McCarthy' study of 1980; a Brazilian bibliography on automation of library services was published (25) a full issue of a Brazilian periodical in the area of library science was devoted to library automation (26) seminars on information and library science have been held regularly during the annual congresses on informatics in the national and international fairs of informatics; a regional seminar on library science and informatics was held during the 3rd National Fair of Informatics in 1984; some integrated systems are in existence, such as that of the University of Brasilia, Institute for Nuclear Energy Research, and a public library system, both in Sao Paulo, the Senate Library, Brazilian Company for Electricity in Brasilia, Foundation Getulio Vargas in Rio de Janeiro, etc.

The year of 1985 started with IBICT suffering an internal re-structuration in order to be better equipped to follow its coordinator role: by mid June a new director was appointed to IBICT, that is now linked to the new Ministry of Science and Technology.

The perspectives are therefore promising, the first most difficult and experimental stages have been surpassed; it is left for us to see whether "political fluctuations" so common in the LDCs, according to Molino & Guadarrama, will not interrupt these sure, planned steps for the development of library automation in Brazil.

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